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ABSTRACT

Three presentations are provided from Symposium 18, Instructional Technology, of the Academy of Human Resource Development (HRD) 2000 Conference Proceedings. "Strategies for Facilitating Interaction When Using Technology-Mediated Training Methods [TMTM]" (Jeffrey S. Lewis, Gary D. Geroy, Orlando Griego) focuses on differences between face-to-face and technology-mediated delivery and provides strategies for facilitating interaction when using TMTM. "The Determination of Factors Affecting User Acceptance of a Computer-Based Training Support Tool in the Workplace" (G. Dale Wagner, Daniele D. Flannery) reports a study that found determinants chosen to approximate user acceptance differed slightly between civilian and military respondents; individual and organizational characteristics were important in influencing perceived usefulness; and behavioral intention was the primary determinant for user acceptance. "Distance Education at the University of the West Indies [UWI]--Positioning the Institution as a Catalyst for HRD in the Caribbean Region: A Case Study" (Carmeta Tate-Blake) reports study data that UWI has made progress in production of course materials, number of courses offered, quantity and quality of materials, student enrollment, and student support services, but quality issues still revolved around the timely production and shipping of materials. (YLB)

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Instructional Technology

Symposium 18

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Strategies for Facilitating Interaction When Using Technology-Mediated Training Methods

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Technology-mediated training methods are becoming more prevalent in scope and usage. These methods cause a difference in the ways that trainees interact. Trainers often have the role of facilitating the interaction between trainees and thus must develop new skills to accommodate the different communication styles associated with technology-mediated methods. This paper focuses on some of the differences between face-to-face delivery and technology-mediated delivery and will provide strategies for facilitating interaction when using technology-mediated training methods.

Keywords: Technology-mediated Communication, Training, Facilitation

As educators and trainers who incorporate technology-mediated interaction into our curriculums, we have noticed that technology influences the way learners interact. Trainers often have the role of facilitating the interaction between trainees and thus must develop new skills to accommodate the different communication styles associated with technology-mediated methods. This paper will focus on some of the differences between face-to-face delivery and technology-mediated delivery methods. In addition to providing evidence of the differences resulting from quantitative data and experiences, we will suggest eight strategies that trainers can incorporate into their methodology to accommodate trainee interaction within technology-mediated training methods.

Technology-mediated Training

Technology-mediated communication has gained significance in education and workplace training. Many students are receiving undergraduate and graduate degrees through interaction with instructors and peers using Internet and CDROM technology. Trainers have also incorporated the technology and have used it to deliver many different types of programs to their organizations and clients. The importance and significance of the method is growing (Hiltz, 1986; Sproull & Kiesler, 1991). The use of technology and training can provide a unique set of challenges that can have a profound affect on the training and learning process (Murphy, Drabier, Epps, 1997). The trainer's role changes when incorporating computer mediated communication into the course (Gunawardena, 1992). The challenges we want to address are related to the fact that students interact differently when using technology-mediated training methods instead of traditional face-to-face training methods.

There have been a number of differences and similarities identified in the research pertaining to the comparison of face-to-face training and technology-mediated training. Communication effectiveness is similar when comparing the two methods, but face-to-face participants report a higher level of satisfaction with the interaction experience (Warkentin, Sayee, Hightower, 1997). Sexual exclusionary behavior has not been found to be greater, but female influence and contribution has been found to be lesser in technology-mediated methods (Ross, 1998). Technology-mediated methods have caused instructor-student interactions to be more informal and student-student dynamics have been found to be more awkward (Treadwell et.al, 1998). One of the most significant differences between the methods is the feeling that participants have of anonymity. In many cases, the participant's personal and professional characteristics are masked which plays a very large role in face-to-face interaction (Treadwell, et.al., 1998). The differences brought about by technology-mediated methods challenge trainers to change the way they facilitate interactions with and between their learners.

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The Study - Examination of Learner Differences

The purpose of this exploratory study was to compare the difference in interaction perceptions between two groups of learners. Our goal was to define what attributes in learner behavior were the same or different depending on the interactive medium for learning. Two groups of learners participated in the same graduate level course titled Management, Leadership, and Team Dynamics. The difference between the two groups was related to the medium used for curriculum delivery and student interaction. Medium A was a live, traditional in-class interaction between the instructor and the students. Medium B was a technology-based interface between the instructor and the students that allowed for synchronous and asynchronous communication without any face-to-face interaction. Learners self-selected to the group and medium that was most appropriate to their personal needs.

The traditional in-class group (Medium A) met once a week for three hours during an eight-week period. A Professor, who had taught the course multiple times, delivered the curriculum in lecture and discussion format. The technology-mediated learners (Medium B) received a three-hour videotape each week of the lecture and discussion that occurred in class. The expectations, reading materials and assignments were the same for the face-to-face learner group and the technology-mediated learner group. The learners were segmented into smaller teams of four to seven participants and were required to submit five team assignments. In addition to the three-hour class period, the Medium A learners met as smaller teams for approximately two hours per week to complete assignments. The Medium B learners used an Internet based education service to participate in synchronous team meetings, asynchronous bulletin board discussions and synchronous discussion sessions which were facilitated by a post-graduate teaching fellow.

During this course and others we have participated in, we observed differences in learner-to-learner interaction when comparing Medium A and Medium B learners. The observations sparked a curiosity to examine the issue in a quantifiable manner. We decided to solicit the learners to identify their perceptions of interaction. Three primary levels of interaction were identified and defined: contribution, hard-type communication, and soft-type communication. The three primary levels of interaction were defined by the researchers for this exploratory study. The contribution construct relates to a learner's perception of the level of contribution or effort they expended throughout the experience in relation to previous learning experiences. The hard-type interaction related to the learner's perception of communication based on our five hard interaction variables: boldness, conflicts, confrontation, frankness and frustration. The soft-type interaction related to the learner's perception of communication based on our three soft interaction variables: disclosure, encouragement and personableness. Table 1 illustrates the constructs, variables and definitions that were used in the survey.

Table 1. Identification of Constructs and Variables for the Study

Activity Construct	Hard Interaction Construct	Soft Interaction Construct
Variable 1 – Accountability Was there a measure of consequences for actions?	**Variable 1- Boldness** Were opinions expressed with forcefulness?	**Variable 1- Disclosure** Were interactions "shallow or deep?"
Variable 2- Contribution Did students "pull their own weight?"	**Variable 2- Conflicts** Did disagreements occur?	**Variable 2 – Encouragement** Was there supportive and reassuring communications?
	Variable 3- Confrontation Were there challenges to attitudes or actions?	**Variable 3 – Personableness** Was personality communicated through interactions?
	Variable 4 – Frankness Was there candid and straightforward communications?	
	Variable 5- Frustration Were expressions of anger, disappointment or lack of fulfillment present?	

Research Questions

The following three research questions were established as we constructed the study and the data collection instrument.

Research Question 1: Is the perception of contribution of face-to-face learners (Medium A) different from the perception of technology-mediated learners (Medium B)?

Research Question 2: Is the hard-type interaction between face-to-face learners (Medium A) different than technology-mediated learners (Medium B)?
Research Question 3: Is the soft-type interaction between face-to-face learners (Medium A) different than technology-mediated learners (Medium B)?

Methods

We used a survey instrument designed to measure three constructs of the perceptions of learner interaction. The survey consisted of ten two-part questions that asked the learners to rate their perceptions of interaction involving themselves and their co-learners. We wanted to determine if the in-class and technology-mediated learners had different perceptions of the degree of activity/work load, hard aspects of learner communication and soft aspects of learner communication. Each question asked for the learner to reflect on their personal involvement perception and their observations of other learners in the class interactions. Available ratings for each of the variables were significantly more, moderately more, moderately less, and significantly less. The learners were asked to relate their experience in the class to their previous experiences as a learner. The respondents were asked to identify themselves as a technology-mediated student or traditional in-class student. They were not asked for any additional personal information.

Subjects

A convenience sample was used for this exploratory study. The subjects for the study are graduate students enrolled in a Master of Business Administration program at a state university. All learners have received a Bachelor's Degree and have at least three years of work experience since graduation. The technology-mediated learners (Method B) were geographically dispersed across the continuous 48 States in addition to a few sojourning participants located in Europe, South America and Japan. The traditional classroom students (Method A) lived within a 50-mile radius of the University. There appeared to be an equal amount of male and female learners. Ethnicity, income and industry variables were not measured in this study.

Data Gathering Procedure

The group of Method A learners included 19 possible subjects. The voluntary survey was distributed during the last class meeting and 15 completed surveys were returned. The population of Method B learners included 249 possible subjects. An electronic message was posted for all technology-mediated learners. The message included a request that all students complete the survey that was posted on a separate web site. The survey was written as a HTML form and the participants were given the opportunity to complete the survey on-line. The surveys that were completed on line were converted to anonymous email messages and sent to the researchers. A request was made to complete the on-line survey within two weeks, at the end of the two-week period 39 completed surveys had been returned from the Method B learners. In an attempt to create equal groups, 15 surveys were randomly selected from the 39 completed surveys submitted by the Method B learners to match the 15 surveys collected from the Method A learners.

Data Analysis

The data from the survey responses were entered into a SPSS table and one way ANOVA calculations were performed to test the variables associated with: contribution, hard interaction, and soft interaction.

Activity Construct

The variables for the activity construct included accountability and contribution. The data for level of activity was analyzed using an ANOVA analysis calculation and the results indicated a significant difference between the two groups of learners (Table 2). From an examination of the means, the Method A students have indicated that they have the greater perception of activity/workload when compared to the Method B learners.

Table 2: ANOVA Table for Activity Construct

ANOVA

ACTIVITY

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.700	1	2.700	11.383	.002
Within Groups	6.642	28	.237		
Total	9.342	29			

Soft Interaction Construct

The variables for the soft interaction construct included disclosure, encouragement, and personableness. The data for the soft interaction variables was compared using the ANOVA calculations and no significant difference was indicated.

Table 3: ANOVA Table for Soft Interaction Construct

ANOVA

SOFT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.63E-02	1	1.63E-02	.058	.811
Within Groups	7.871	28	.281		
Total	7.887	29			

Hard Interaction Construct

The variables for the hard interaction construct included boldness, conflict, confrontation, frankness, and frustration. The data analysis for the hard interaction was analyzed using an ANOVA calculation. There is a significant difference between the hard interaction variables when comparing the Method B and Method A learners. The plot of means reveals that the technology-mediated students have more hard side communication in their interactions.

Table 4: ANOVA Table for Hard Interaction Construct

ANOVA

HARD

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.566	1	.566	2.312	.140
Within Groups	6.861	28	.245		
Total	7.427	29			

Conclusions

Answers to the Research Questions

As a result of the data collected from the learners and the statistical analysis we have performed, the following answers to the research questions are presented.

Research Question 1: Is the perception of contribution of face-to-face learners (Medium A) different from the perception of technology-mediated learners (Medium B)? Yes, because of the perceptions of accountability and contribution, face-to-face learners perceive a higher level of activity when compared to technology-mediated learners.

Research Question 2: Is the hard-type interaction between face-to-face learners (Medium A) different than technology-mediated learners (Medium B)? Yes, technology-mediated learners perceive a higher level of hard-type interaction when compared to face-to-face learners.

Research Question 3: Is the soft-type interaction between face-to-face learners (Medium A) different than technology-mediated learners (Medium B)? No, there is no difference in the soft-type interaction when comparing face-to-face learners and technology-mediated learners.

Implications

As a result of this study we believe the following inferences can be made:

- Facilitators of technology-mediated learning experiences may need to increase the individual accountability aspects of the experience.
- Because the technology-mediated learners do not have to communicate "face-to-face," they are more likely to interact on a hard level.
- Facilitators of technology-mediated learning experiences should be aware that some hard levels of interaction may need to be mediated.
- Because the level of soft interaction was equal between the two groups, the technology-mediated learners do not perceive the technology-based media as being without human factors.

- Learners who are intimidated by the technology-mediated technology may need to become aware of the occurrences of soft interaction.

Eight Strategies for Mediating Trainee Interaction

The following eight strategies for mediating trainee interaction have been provided to assist trainers who choose to use technology-mediated training methods. We suggest that trainers consider these themes in designing and conducting any training that utilizes technology.

Strategies Based on Activity Construct

Strategy 1: If the trainees will be working within groups, require the groups to write an agreement or charter that will define levels of contribution and commitment.

Strategy 2: Increase accountability by requiring trainees to write self-assessments and team member assessments.

Strategies Based on Hard Interaction Construct

Strategy 3: Be prepared as a trainer to mediate interactions between students that involve an increased level of boldness, conflict, confrontation, frankness and frustration. These situations may occur more frequently than a typical face-to-face arrangement.

Strategy 4: Prepare your trainees by communicating to them the possibility of encountering an increased level of boldness, conflict, confrontation, frankness and frustration.

Strategy 5: When trainees use take advantage of the anonymity and make bold statements, use the opportunity to challenge ideas and facilitate a deeper level of communication.

Strategy 6: Be prepared to moderate conflicts and discussions between trainees that become heated or emotional

Strategy 7: When students present an unexpected attitude, take the opportunity to challenge the attitude and pursue a deeper understanding of their perspective.

Strategy 8: Take notice of trainees who appear to be uncomfortable with the level of interaction and encourage them to stretch beyond their comfort zone.

Summary

Technology-mediated training methods have an interaction effect on trainees that should be addressed by trainers who incorporate the methods. The trainees who are learning at a distance, through technology-mediated methods, are more likely to use hard interaction characteristics and need additional aspects of accountability. It is also important to note that technology-mediated methods are not sterile, personality-less environments. Because of the differences in learner interaction, trainers must understand and become skilled in facilitating technology-mediated interactions. Trainers can make efforts to incorporate strategies to ensure the success and satisfaction of their trainees.

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The Determination of Factors Affecting User Acceptance of a Computer-Based Training Support Tool in the Workplace

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Computer-based training support systems now make it possible for employees to manage their own training solutions right at their desktop. As a result, it is critical for educators to know and understand the factors that influence the user acceptance of these systems. This study attempts to identify and empirically test factors thought to influence the user acceptance of a training support system among selected employees at a government agency headquartered in Maryland.

Keywords: Autonomy, Self-Directed Learning, User Acceptance

Human resource developers are increasingly being challenged to meet just-in-time training needs. To enable "competent human performance" (doing what the job requires, when it is required) and measure the impact of training on that performance, employees must be willing and able to access computer-based training on demand (Shandler, 1996, p. 21). The purpose of this research is to identify and empirically test factors that may influence the user acceptance of a computer-based training support system. For this study, user acceptance means that a person will use a computer-based training support tool to meet most, if not all, of his or her education and training needs.

Theoretical Framework

Literature from across a number of different areas was reviewed for this study. These areas included human resource development, adult education, instructional systems, psychology, human-computer interaction, computer-based training, business management, computer science, information systems, and organizational management. The applicable literature found to support this study can be summarized into the following four topical areas.

Self-Direction in Learning

In Adult Education, autonomy becomes the central component for the understanding of adults as self-directed learners. Chene (1983) identifies three major elements of an autonomous learner: independence, the ability to make critical judgments or decisions, and the ability to articulate the norms and limits of a learning society. Candy (1991) adds to Chene's perception of the autonomous learner by characterizing autonomous people as those with a strong sense of personal values and beliefs. These values and beliefs provide them with a firm foundation for conceiving goals and plans, exercising freedom of choice, using rational reflection, having will power to follow through, and exercising self-restraint and self-discipline.

"Much of the research into personal autonomy has been based on the notion that it is a context-free disposition; once people 'become' autonomous, they will behave autonomously in whatever situation they find themselves" (Candy, 1991, p. 114). But, as Candy points out, there are two flaws with this line of reasoning. First, autonomy is not a product but is more akin to a process. This means that an individual does not "become" autonomous in the absolute sense. Instead the individual is able to think and act autonomously dependent upon the situation or circumstances at the time. Second, although some adults display more self-assurance or clarity of purpose across a range of situations when compared to others, it is impossible to judge whether or not an individual is autonomous without identifying the context within which this autonomy will, or might, manifest itself.

As a result, Candy (1991) is urging researchers to adopt an "interpreter research approach," an approach that allows for individual features rather than ignoring or denying their existence. At the core of the interpretative orientation are the purposes, intentions, and frames of reference every adult learner brings to bear on each learning

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situation or circumstance. These three factors have the ability to influence everything from the individual's initial willingness to engage, to the type of help sought and resources used, to the outcomes that emerge from any learning encounter.

Too, there is a crucial dichotomy in the meaning of self-direction. The distinction is between self-management, "the variable quality of being self-directing within one's field of constraints of free actions," and self-determination, "the variable quality of being self-directing to the extent that one is in charge of one's destiny" (Candy, 1991, p. 20). For this study, self-determination refers to the amount of control an individual feels when identifying his or her own education and training needs whereas self-management refers to an individual's ability to manage and control his or her own training plan. Although it would seem rational that self-determination would be the quality most advocated and desired, "it is arguably self-management which, in many cases, is articulated, elaborated, and attained" (Bagnall, 1987, p. 91). Both aspects of self-direction are processes, dependent on situations or circumstances at a particular time (Candy, 1991; Garrison, 1997).

Perceived Ease of Use and Usefulness

Even though there is a considerable amount of literature that focuses on the technical aspects of computer technologies, most of it is primarily written for designers and software engineers, often addressing the needs of the industry's "typical user" (whoever he or she may be). In fact, only a few studies have been conducted in which the primary focus has been upon the cognitive and affective attitudes of the end-users, typically after the subjects were introduced to a new type of computer technology. These latter studies have typically used Davis's (1986) technology acceptance model (TAM); an adaptation of Fishbein and Ajzen's (1975) theory of reasoned action (TRA).

The TAM is a highly reliable tool that can be used to predict and explain computer-related usage behavior. The model's independent variables include behavioral intentions, perceived usefulness, and perceived ease of use. Davis (1989) defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" and perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort" (p. 320). Using these two definitions and a multiple studies approach, Davis refined and validated two six-item scales to measure perceived usefulness and perceived ease of use. With limited exceptions (Robey, 1979; DeSanctis, 1983), this is one of the first studies to empirically validate measurements that can be used to predict the user acceptance of technology.

Computer Anxiety, Individual Characteristics, and Attitudes toward Use

Computer anxiety, software anxiety, and attitudes toward use are affective response variables (Davis, Bagozzi, and Warshaw, 1989; Fishbein and Ajzen, 1975). Attitudes indicate an individual's reaction to an object, such as a training support system, on a like-dislike continuum (Fishbein and Ajzen, 1975) whereas computer anxiety is the tendency of an individual to feel uneasy, apprehensive, or even fearful about the current or future use of computers (Raub, 1981). Similarly, software anxiety refers to the tendency of an individual to feel nervous and apprehensive about using a specific software package or application.

Researchers, most of which are in the management information systems field, continue to study computer anxiety in a variety of settings and, in doing so, investigate other variables that affect it (Igbaria and Chakrabarti, 1990; Marcoulides, Mayes, and Wiseman, 1995; Maurer, 1994). These variables typically include individual characteristics, such as age, gender, academic major, education, computer experience, and computer attitude. However, after conducting a thorough literature review on computer anxiety, the authors found it very difficult to make generalizations based upon the results of these studies. Many of the studies seem to suggest the significance of a specific attribute as it refers to computer usage, only to have the significance called into question in another similar study. Unfortunately, the majority of the research lacks focus, making it difficult to support any particular claim. The same is true for software anxiety.

Organizational Characteristics

Several studies from the management information systems field suggest both information and management support may influence the user acceptance of a training support system. In one such study, Igbaria (1993) sought to find empirical evidence to support the prediction made by Davis, Bagozzi, and Warshaw (1989) that perceived usefulness is influenced by organizational characteristics. As a result, Igbaria divided organizational characteristics into two attributes-information support (includes the presence of an information center staffed by professionals who

provide recommendations and assistance to computer users when needed) and management support (includes the support and encouragement by top management to use computers). Igbaria found information support to have direct effects on perceived usefulness and attitudes toward use. He also found information support had both direct and indirect effects on behavioral intentions and perceived usage via computer anxiety and perceived usefulness. Management support was found only to have a direct effect on behavior intentions.

In this study, information support refers to the availability of on-line and off-line assistance and the accessibility of necessary on-line instructional information and training courses available through the computer-based training support system. Management support refers to top management's encouragement and the necessary allocation of resources to properly support a computer-based training support system. Management support is also a function of how much control each employee has over his or her own professional development and growth.

Hypotheses

This research was guided by individual hypotheses that predicted each of the following variables will affect the user acceptance of the computer-based training support system (TSS): behavioral intentions, perceived usefulness, self-determination, self-management, computer anxiety, software anxiety, attitudes toward use, individual and organizational characteristics.

Methodology

Research Setting

The specific purpose of this study was to identify and empirically test factors thought to influence the user acceptance of a newly integrated training support system among selected employees at a government agency headquartered in Maryland. The system, which became fully operational in July 1997, provides an interface and the capabilities necessary to electronically deliver over 400 Web-hosted computer-based training (CBT) products on demand to employees' personal computers over the Internet.

Sample

Employees selected to participate in this study were required to have an active account for the computer-based training support system and a minimal amount of experience using the Web-based tool. From 1529 possible subjects, 1020 people were invited to participate in the study. This sample population was identified using the stratified sampling technique. This ensured that the appropriate number of males and females as well as civilians and military personnel were drawn from the homogeneous subsets of the population.

Instrumentation

A questionnaire survey comprised of items taken from 12 separate subscales was developed to measure the context characteristics that might affect the user acceptance of the training support system (TSS). These subscales included individual characteristics, browser experience, computer training, information and management support, perceived usefulness, perceived ease of use, self-determination, self-management, computer anxiety, software anxiety, attitudes toward using training support systems, and behavioral intentions. Of the 1020 questionnaires distributed, 50 came back undeliverable. Respondents were given three weeks to complete and return the questionnaire either electronically via the Intranet or physically using internal mail. During the response period 446 respondents returned questionnaires, 345 electronically and 101 using internal mail. This equated to a 46% response rate.

Data Analysis

The data was entered onto a spreadsheet accessible using SPSS version 7.5 for Windows. Prior to the actual analysis, the data were checked for blatant data entry errors as well as outliers and rogue values. The one-way analysis of variance (one-way ANOVA) procedure was then used to examine the variability among the sample means. As a result, several subtle differences were discovered that suggested there might possibly be two

subpopulations present within the data. There was also evidence that suggested three subscales-attitudes toward use, perceived ease of use, and software anxiety-all collected data that might have measured aspects of the same variable. Further analyses using the stepwise regression selection method strongly suggested that: (1) the civilians be grouped separately from the military personnel, (2) the perceived ease of use subscale be removed from further analysis, and (3) questions contained within the software anxiety scale that pertained to attitudes toward use be removed. A numerical value for each scale was then obtained by adding the individual item responses together for each scale. The composite reliability of each measure was then determined using Cronbach's alpha. These values ranged from a high of .9425 for perceived usefulness to a low of .5812 for computer experience.

The statistical analysis method chosen for this study was multiple regression/correlation analysis, a highly general and very flexible data-analytic system that may be used whenever a dependent variable is to be studied as a function of, or in relationship to, any factors of interest expressed as independent variables. One of the benefits of using this method was that it provided the researchers with the ability to present quantitative data in a manageable form. It also allowed the dependent variable's variation to be explained in terms of a number of other independent variables, which in this study were measurable. Furthermore, the stepwise regression selection method was used for controlling the entry and removal of independent variables from the regression models.

Results and Findings

The respondents all held various positions across a wide range of functional areas around the world. Of the 448 participants, 41% were civilians and 59% military personnel. Males outnumbered females by a ratio of 3:1. (These percentages are consistent with the population contained within the database at the time of the study: 35% civilians, 65% military and 76% male, 24% female.) Considerably more military respondents (25.8%) were requested to take courses using the TSS in comparison to the civilian respondents (13.7%). More military respondents (73.6%) than civilian respondents (33.4%) reported their intention to take computer based training courses available through the TSS to earn equivalent college credits.

The one-way ANOVA technique was used to reveal the first clues to the possible relationships that existed among the variables used within this study. These and other potential relationships were then tested using multiple regression/correlation analysis. As a result, numerous regression models were generated and compared. Below are the resulting regression models that were identified to represent the relationships among the variables.

User Acceptance as the Dependent Variable

A regression model for user acceptance (Table 1) was first derived for each of the two groups of respondents. The civilian model had an R^2 value of .203 and an F statistic of 19.985 (df = 159). The military model had an R^2 value of .124 and an F statistic of 31.341 (df = 222). Behavioral intentions (BI) were a strong predictor of user acceptance in both models whereas self-management (SM) only appeared in the civilian model. The self-management variable was removed from the military model after its t value fell significantly below two ($t = .981, p > .05$).

Table 1 – Coefficients for User Acceptance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. error	Beta		
civilian	(Constant)	-6.918	2.252		-3.072	.003
	BI	.510	.088	.414	5.806	.000
	SM	.112	.048	.165	2.317	.022
military	(Constant)	-4.182	2.235		-1.871	.063
	BI	.780	.139	.352	5.598	.000

Behavioral Intentions as the Dependent Variable

A regression model for behavioral intentions (Table 2) was then derived for the two groups of respondents. The civilian model had an R^2 value of .465 and an F statistic of 37.121 ($df = 175$). The military model had an R^2 value of .412 and an F statistic of 41.720 ($df = 242$). Attitudes toward use (ATU), perceived usefulness (PU),

educational level (EDLEVEL) and browser experience (BROWEXP) were predictors of behavioral intentions in both models.

Table 2 – Coefficients for Behavioral Intentions

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. error	Beta		
civilian	(Constant)	4.145	1.177		3.521	.001
	ATU	.129	.057	.178	2.246	.026
	PU	.292	.051	.438	5.684	.000
	EDLEVEL	-.611	.130	-.279	-4.716	.000
	BROWEXP	.197	.062	.192	3.192	.002
military	(Constant)	5.084	.956		5.320	.000
	ATU	.163	.040	.249	4.100	.000
	PU	.219	.037	.362	5.865	.000
	EDLEVEL	-.241	.119	-.101	-2.019	.045
	BROWEXP	.198	.047	.216	4.174	.000

Perceived Usefulness as the Dependent Variable

A regression model for perceived usefulness (Table 3) was separately derived for the civilians and military personnel. The civilian model had an R^2 value of .509 and an F statistic of 86.530 (df = 169). The military model had an R^2 value of .435 and an F statistic of 60.421 (df = 238). Attitudes toward use (ATU) and management support (MS) were strong predictors of perceived usefulness in both models. Computer anxiety (SA) was a predictor only in the military regression model.

Table 3 – Coefficients for Perceived Usefulness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. error	Beta		
civilian	(Constant)	5.215	1.441		3.618	.000
	ATU	.672	.063	.614	10.736	.000
	MS	.301	.080	.216	3.772	.000
military	(Constant)	1.256	1.973		.637	.525
	ATU	.447	.062	.404	7.248	.000
	MS	.349	.064	.279	5.428	.000
	CA	.220	.054	.219	4.117	.000

Attitudes toward Use as the Dependent Variable

The last dependent variable investigated was attitudes toward use (Table 4). Again, a regression model was derived for the civilian respondents and another for the military respondents. The civilian model had an R^2 value of .625 and an F statistic of 92.261 (df = 169). The military model had an R^2 value of .679 and an F statistic of 161.497 (df = 232). Software anxiety (SA) and information support (IS) were strong predictors of attitudes toward use in both models. Self-determination was a predictor only in the civilian model. Self-determination (SD) was removed from the military model because its t value fell significantly below 2 (t = 1.077, p = .282). Gender was a predictor only in the military model. Similarly, gender was removed from the civilian model because its t value fell significantly below 2 (t = 1.155, p = .250). Age was not a factor in either regression model.

Table 4 – Coefficients for Attitudes toward Use

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. error	Beta		
civilian	(Constant)	-40.414	4.063		-9.947	.000
	SD	-.091	.048	-.098	-1.902	.059
	IS	.646	.075	.424	8.597	.000
	SA	1.053	.092	.599	11.401	.000
military	(Constant)	-44.851	3.544		-12.657	.000
	IS	.449	.051	.362	8.839	.000
	SA	1.111	.079	.583	14.000	.000
	GENDER	.914	.356	.098	2.565	.011

Conclusions and Recommendations

The results from the multiple regression analysis indicated that the determinants selected to approximate the user acceptance of the TSS differed slightly between the civilian and military respondents. The most notable difference was that self-determination and self-management were not present in the military's structural model but were in the civilian's structural model. The civilian model indicates that as self-management increases, the user acceptance increases. The effect of self-determination on user acceptance, on the other hand, was mediated by attitudes toward use, perceived usefulness, and behavioral intentions. Furthermore, as self-determination increases, attitudes toward use decrease.

The results across both groups confirm the importance of individual and organizational characteristics in influencing perceived usefulness. The results found that perceived usefulness plays a very important role in mediating the relationships between attitudes toward use and management support, and behavioral intentions. Educational level and browser experience also had a direct relationship with behavioral intentions. Behavioral intentions had a direct effect on user acceptance.

The statistical analyses in this study revealed that behavioral intention is the primary determinant for the user acceptance of a training support system. Users' acceptance of a training support system can be reasonably well predicted from their intentions. Furthermore, the results also demonstrated that determinants selected to approximate the user acceptance of the training support system differed between the civilian and military respondents. The results suggested that the civilian respondents were more autonomous and more concerned about the system's perceived usefulness than the military personnel.

It is recommended that autonomy become the central component for understanding adults as self-directed learners. For contemporary organizations, such as those described by Shandler (1996), management must be willing to address the unique attributes of new professionals. Today's professionals, for example, have expertise gained from prolonged specialized training. They often expect to be given the opportunity to determine and manage their own educational and training needs. Moreover, they tend to be fully committed to their work and profession (Von Glinow, 1988). These attributes need to be reflected in the training support systems used within these organizations.

Limitations

Although the results from this study are useful for describing the characteristics of a large population, the generalization of the results are limited to the population sample of the governmental agency used in this study. Agency employees are not completely representative of the entire population of professionals. These employees are younger and, as a group, probably more computer literate than their counterparts in industry and education. Hence, ease of use may have been less of an issue for this sample than it would have been for professionals more generally. The computer-based training support system investigated, while typical of the types of training support systems available, is still only one system. With more difficult or complex systems, ease of use may have had a greater impact on intentions.

Another limitation may have been the usage measures. These measures were self-reported as opposed to objectively measured. It is not known how accurately self-reports reflected actual behavior. Likewise, most of the variables in this study were based on people's subjective feelings and did not necessarily reflect objective reality.

However, this limitation was overcome by having access to: (1) the number of system accounts that had been activated, (2) the average number of courses that have been completed per account holder, and (3) the types of problems/concerns most frequently addressed by support personnel.

Research Contributions

This study makes several significant research contributions to the field of HRD. First, in the necessity for HRD to provide just-in-time training, often computer-based, this research makes a major contribution by investigating factors that affect CBT. This study also contributes to a further understanding of adult learners and issues of autonomy and training so trainers can access learner's readiness to use CBT. This study determined to what extent self-determination and self-management, in correlation with the other independent variables, influenced the user acceptance of a training support system. A major goal in this investigation was to determine the relationship that these two dimensions had on the user acceptance of such as system. Now that these relationships are better understood, corrective action can be taken to increase the likelihood that more users will accept future training support systems.

Second, the study contributes to HRD research. By including self-determination and self-management in this study, this research has helped to expand the understanding of autonomy, particularly the aspects of self-determination and self-management as it relates to training and adult education. One future question to be researched is which of these two personal qualities is more predictive when it comes to the user acceptance of a training support system?

Third, this study has highlighted the potential for the field of adult education to inform other areas of study. Unfortunately a number of researchers and practitioners have overlooked the contributions adult education has made, typically through the lack of knowledge or proper understanding of the field. This study highlighted the fact that adult education can provide meaning to other areas, such as informational systems, management information systems, social psychology, and organizational behavior.

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Distance Education at the University of the West Indies - Positioning the Institution as a Catalyst for Human Resource Development in the Caribbean region: A Case Study

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The data show that the UWI appears to have made progress in the production of course materials and in the number of courses being offered through distance education. The UWI has also made progress in the quantity and quality of its distance materials and progress in the enrolment of distance students and in student support services, but there are still quality issues revolving around the timely production and shipping of the materials. While there is increasing acceptance by the University's faculty of the need to adapt traditional instructional development styles for distance, this transition remains one of the challenges of the University's overall distance education program.

Keywords: Dual Mode Institution, Regional Distance Education, HRD Via Distance Education

In 1983 the University took on distance as a major thrust. It obtained funding from numerous sources (UWIDITE Report 1986-1993) to expand its operations. This expansion in the 80s was set up as the University of the West Indies Distance Teaching Experiment (UWIDITE). The stage had been set for the development of UWIDEC's expansion in distance education from a 1993 Caribbean Development Bank loan of "$US9.896 million and a grant of $US0.211 million over three years" (UWIDITE Report, 1986-1993, p.1). The loan funds provided for the technical expansion to accommodate simultaneous audio-conferencing capabilities to the sites across the Caribbean. It would also enable the Centre to establish computer labs at the sites and facilitate the acquisition of audio/video teaching possibilities through compressed video technology. The University has moved apace with its plan to maximize its effort in positioning itself as a major force in the education of adults, and in 1996 became a dual mode institution offering courses by distance alongside the 50-year tradition of on-campus classes. In a speech by the Vice Chancellor, at his installation ceremony, Professor Rex Nettleford noted:

> The UWI must now be seen as part of an articulated educational system operating within and beyond national and regional boundaries . . . [by] deepening and heightening the commitment to distance education as a priority and bring into the loop of UWI's outreach the entire academic staff and thus afford to the increasing willing numbers greater access to quality university education. (1999, p. 3).

The Vice Chancellor of the University Professor, Rex Nettleford, has also been very declarative about the critical role the University had to play in the development of the region's people.

> Many of the UWI's early scholars understood "a university is a living organism that draws its nutrients from the society it serves and that cloistered isolation in an ivory tower by scholars who see their remit exclusively in the past rather than correspondingly in the present, itself tomorrow's past, is a recipe for irrelevance ... It is in this sense that the University of the West Indies can happily reclaim its central role in making it possible for the future Caricom Caribbean to build up the capability for self development and the capacity to respond innovatively and sensitively to the unpredictable shifts of change in a world in doubt at the end of [the] century (1999, pp. 8-9).

Problem Statement and Theoretical Framework

The University of the West Indies has found itself in the mix of a growing number of North American universities vying for the brightest and the best of the region's potential students who cannot find places in the lecture halls. The UWI is cognizant of the competition and of its advantage in knowing the region and the diverse needs of its potential students within the wider geographic area of the Caribbean. Notwithstanding, UWI understands that complacency does not guarantee dominance even in the face of such advantage. The Renwick, Shale, and Rao (1992) report was instructive. The report found that enrolments from the Non-Campus Countries (NCCs) had

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declined during the years 1989-1990; for example in 1960-61, NCC countries represented 13% of the enrolment while in 1989-90 enrolment declined to 5%. The report also noted the need for an organized department to properly execute the distance courses of the University's programs. The University felt the push towards distance delivery could boost enrolment from NCCs.

> Consequently, distance education at UWI must quickly establish an image of quality in content; effectiveness and timeliness in service to students; flexiblity and responsiveness to faculty and University representatives; competence, responsibility and accountability in the relationship with the University hierarchy and non-University consumers of its service. (p. 12, Distance Education at the University of the West Indies - Strategic Plan, September 1996).

Since the inception of the dual mode initiative there has been no study or evaluative process of distance education process within the context of the dual mode operation. This study therefore sought to answer the following propositions: (a) The Distance Education Centre has played a role in improving production and delivery of material appropriate for distance students; (b) The Distance Education Centre has played a role in facilitating the retention and increase in student enrolments, impacted traditional students strong desire to use materials designed for distance students, and facilitated the transition of traditional instructors to the distance mode.

Several theories inform this paper. The history of the development of distance education at the University of the West Indies seems grounded in the foundation theories of general education. In fact, Keegan's (1993) theory of distance education bears strong resemblance to the UWI's distance operations. Keegan feels that "distance education can be seen from the perspective of three developmental stages – correspondence, teleconferencing, and computer-based learning" (p. 17). He further believes that the foundation theories of distance education really emanate from the grounded theories of the general education. Garrison (1989), on the other hand, feels that technology plays a greater role in the way distance education is shaped and argues that technology and distance education are not mutually exclusive, and that much of the theory and practice in distance education has evolved because of sophisticated instructional technology.

Central to higher education, and by extension higher education through distance mode, is the theory of adult learning. Verduin and Clark (1991) have identified self-directedness as a necessary ingredient for successful distance learning. The notion of self -directed learning was antithetical to traditional pedagogy and it was this notion that led to research which found that adults were in many cases in charge of most of their learning situations. Researchers like Houle (1984) and Tough (1978) conducted studies to define self-directed learning as a valid way for the adult learner to take charge of his or her own success in the adult learning environment. They found that the adult learner was capable of directing his or her own learning assignments for a greater percentage of the learning transaction. In addition, traditional classrooms are rationalizing their approach as the use of technology presents challenging possibilities for learners. Keegan (1995) has posited that the impact of new technologies on distance education could even change the traditional definition of distance education to incorporate the notion of a virtual classroom. He has suggested that interaction through face-to-face, live two-way audio and video communication is possible with the virtual classroom "electronically linking instructor and students at various locations" (p. 3). Knapper (1990) has added that the technological advances do not only have the potential to reduce the physical distance in distance education, but can also reduce the psychological distance in affording the learner who really has a preference for independent study to take advantage of distance education courses. It is this potential that has not eluded the University of the West Indies, and as Hoffman (1995) stated, it may be instructive to combine the traditional mode of education with the distance education mode.

Methodology

This is a qualitative study based on longitudinal observations at a traditional University in the Caribbean at its originating campus (Mona, Jamaica). The institution offers courses leading to the baccalaureate, masters, and doctoral degrees. The institution is 50 years old and this year had enrolment of 11,045 students including 1,607 distance students (Campus Principal, October 1999).

Researcher as Instrument

The writer of this paper has been an observer of the distance education process at the University of the West Indies since the early 1980s. These earlier approaches have provided data to place the current paper into contextual perspective. Research culminating in the production of this paper continued in May 1999 using the Mona experience as the case. The research process continued through one-on-one exploratory interviews, examination of documents and ongoing observations of all aspects of the distance education operations at the UWI. Data were collected solely by the writer who brought some bias to the research process. One obvious bias was the notion that

distance education is different from traditional education and that by definition distance education requires different approaches. Another obvious bias was that distance education requires new approaches in instructional techniques for traditional staff, ongoing training for transition, and initiation programs for new members of the educational community in a dual mode institution.

Data Collection, Analysis and Interpretation

Observations involved examining documents pertaining to distance education, and open coding was done in the categories of structure, production, delivery of material, structure of the organization, quantity and quality of distance education materials, student enrolment and retention, and faculty preparation and involvement in distance education. These data were verified through triangulation. Data collected from interviews were verified through secondary data and by cross-referencing with distance education senior staff, departmental reports, and existing distance education reports.

Data were verified in a second round of data collection during one-on-one meeting with faculty writing for distance; attendance and discussion at distance education curriculum meetings; discussions with senior management of the DEC; observation of students studying via distance education through audio-conferences, and consultations with agencies using the distance education facilities. These data were validated by records of meetings and through personal communication with individuals working in distance education at UWI. In the case of student enrolment, the data were verified through triangulation of figures presented from DEC Mona, Registration, Mona, and from the Principal's office, Mona. Where there were discrepancies in these figures the researcher deferred to the figures from the Principal's office. The data were coded according to the propositions posited for this paper. The findings are presented herewith and the writer would like to caution that no generalizations should be inferred from the data to the wider community of distance education; rather, the data is case related and very limited in scope. However, while this is so, it is fair to suggest that although this data originated from one of the three major campuses at the University of the West Indies, some generalizations of the findings can be attributed to the entire University's distance education program.

Findings, Conclusions and Limitations

Since 1996, when the Distance Education Centre was established, the distance education operations of the University have been organized and managed to cater to 26 sites, 10 of which are intra-island (Jamaica). The Centre falls under the Board of Non-Campus Countries and Distance Education under the direction of a Pro-Vice Chancellor (see Figure 1).

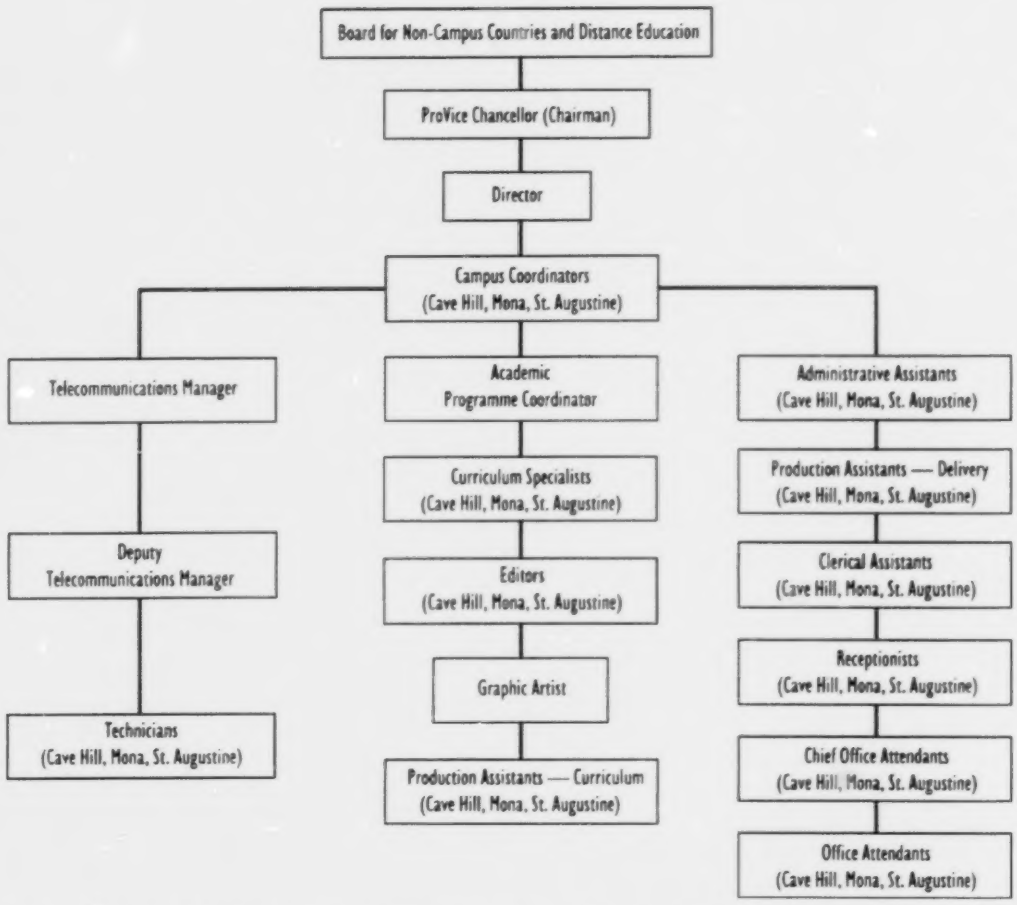

Figure 1. Distance Education Centre Organizational Chart-Does not represent extended activities of distance sites

Decisions for distance education fall within the purview of the Pro-Vice Chancellor for BNCCDE and the organizational structure indicates a definite industrial process enunciating a team rather than an individual process. This organizational structure represents a radical shift from the previous operations of UWIDITE which operated with just 7 persons, (UWIDITE report 1986-1993) with many doubling in roles. The current operations of UWIDEC are structured along clearly defined roles. Although the structure is clearly defined with faculty playing a critical role, there is still difficulty incorporating faculty within this structure. With a structured Distance Education Centre, most Course Packages are organized along a print-driven mode based on a systems design development scheme (see Figure 2).

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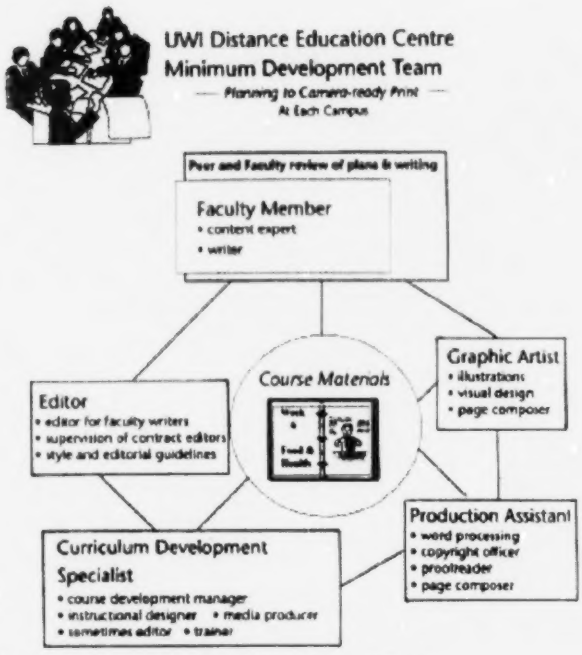

Figure 2. UWI Distance Education Centre Minimum Development Team
(Adapted from Handbook - Quality Assurance Standards, 1997, DEC.)

As you can see in Figure 2, there are several quality processes and interchanges with faculty/course writers before the student finally gets the material.

Since 1996 UWIDEC has instituted a system of quality standards for the production of materials for the distance students. The Centre has moved towards a primarily print-based delivery away from the traditional oral-delivery via the audio-conferencing network. The typical delivery style at the University is print-driven with tutorial and telecommunication support. The Curriculum Development Unit of the Centre develops and produces the distance education material and since 1996 the CDUs have developed print-based materials for programs in education, construction management, the Social Sciences and applied sciences. UWIDEC warehouses the materials for these courses and these are shipped out to the students at the distance sites at the beginning of each semester. At present there is no built-in quality check at the faculty level with respect to content through peer review or otherwise, or at the printers to see that materials are up to par before actual delivery. However, after the final editing, the course writer is asked to verify that the final product is accurate in content and style. The Curriculum Development Unit (Mona) is suggesting a new system where faculty will physically sign off to the authenticity of materials. The dual mode system does not absolve the faculty or the content expert of the ultimate responsibility for the content.

In June 1999 at a Curriculum Development Meeting in Barbados, participants discussed and rationalized the nomenclature of the Course Package to make it reflective of its content. For example, self-instructional materials to be developed as of that date will be called "Course Materials", with the title page reflecting the subject name. The participants at the meeting also reinforced the University's commitment to creating its own self-instructional materials relevant to the needs of the region.

Although the University has a structured system (see Figure 2) for the production and delivery of materials for the distance students, the program is not without its setbacks. In many instances, the writers of distance education materials are the same faculty who have heavy workloads teaching face-to-face students and find deadlines for completion of course materials difficult to meet. This sometimes resulted in piece-meal distribution to the students and less than ideal packaging.

UWIDEC Facilitating Increased Enrolment and Retention

The establishment of University sites and the creation of computer laboratories for the distance sites have given access to the distance students which they might not otherwise have had, for example, the use of the internet,

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email and word processing. The data show that despite setbacks and complaints there is growing interest and increased enrolment as reflected in Table 1. For example, "the inaugural teleconference in March 1983 had only 5 sites . . . However expansion in the telecommunications industry now allows [UWIDEC] to reach [26] sites in [14] countries around the region" (Odle, K. 1996, p. 3).

Table 1
UWIDEC Student Enrollment

	1996/97	1997/98	1998/99
Total Student Body	10,137	10,652	11,045
Males	32%	30%	29%
Females	68%	70%	71%
Jamaicans	8,379 (82.6%)	9,289 (87%)	10,005 (90.6%)
Other cont. territories	1,605 (15.8%)	1,221 (11.5%)	894 (8%)
Guyana & Turks & Caicos	56 (0.6%)	54 (0.5%)	47 (0.4%)
Other Countries	97 (1%)	88 (1%)	99 (1%)
Total On-Campus Students	8,252	8,996	9,040
Full time	5,166 (63%)	5,523 (61%)	5,717 (63%)
Part-time	3,086 (37%)	3.473 (39%)	3,323 (37%)
Total Off-Campus	1,885	1,590	2,005
Distance	1,573	1,240	1,607
Tertiary level institutions	312	350	398

Source: Principal's Office: University of the West Indies, Mona, October 1999.

According to data from the Principal's Office, (October 1999), the projected enrolment, (on-campus and off-campus) by the end of 2002 is estimated at 13,300, which is an estimated 20% increase over the 1998/99 academic year. The report to Academic Board October, 19, 1999 projects that this increase will be due "to a large extent in the expansion of distance education" (p.3).

UWIDEC Facilitating Transition of Traditional Faculty to the Distance Mode

Workshops and symposiums have been held during the early transitioning period 1995/1996 and a workshop was held as recently as May 1999 to facilitate the writing and development of the Master of Science in Family Medicine and Psychiatry program slated for the year 2000. The Centre has had several training sessions for Tutors, most of whom are instructors in TLIs (Tertiary Level Institutions) and while the Centre fields some discontent in that area, that aspect of the operation appears to be working effectively. In August 1999, UWIDEC once again embarked on a "Train the Tutor Workshop". This training exercise was designed essentially to prepare these trainees to train new inductees.

On the other hand, there has been no organized ongoing training for faculty involved with distance teaching and preparation of distance teaching material. UWIDEC has been involved in some workshops on an as-needed basis even though the strategic plan (1996) calls for ongoing training. UWIDEC has prepared a Quality Standard Manual which guides the writers of distance education, but the dynamics change so often that ongoing training in a scheduled fashion seems to be important but lacking at this time. Dirr's (1999) Commonwealth sponsored study is particularly poignant and points to the need for ongoing training and awareness. He notes that "What has proven particularly difficult to change, however, is the weaning of staff away from proprietary course development towards a team approach" (p. 54). Notwithstanding this observation the Centre has managed to implement measures to improve production and delivery of materials and has had success in gradually winning over faculty to the industrial process of distance education.

Conclusions

The new thrust for distance education and the University's serious commitment to dual mode course offerings gave rise to increased and improved student support systems in respect of distance student registration, orientation programs for distance students, in-house summer program orientations, and increased awareness about distance education. The availability and packaging of the distance education materials for the University's various

academic programs, tutorial, and improved audio-conferencing systems have given rise to increased enrolment, one of the major aims of the dual mode operations. In fact, the 1998/99 enrolment figures for distance education jumped dramatically (see Table 1). The audio-conferencing system needs further upgrading and digitization to maximize the system's output. The tutorial system used at UWIDEC works in the Caribbean context, as the distance student, while accepting of distance is still mentally oriented to the traditional mode of delivery and looks forward to this contact with someone who can help to clarify or cement a point of difficulty with content. Since 1998, the University has also instituted within its library facilities direct contact for the distance students where they can (through their site coordinators) request library materials and have these couriered to their sites. However, this support program is still young and needs more coordination.

The University of the West Indies Distance Education Centre has played a vital role in carrying out the mandate of the University as a dual mode institution committed to delivery of educational programs that are as transparent in distance as they are in the face-to-face mode of delivery. The setting up of a Curriculum Development Unit in 1996/1997 has been instrumental in facilitating the development and production of self-instructional course material. This has enabled more material to be produced and marketed with some identity of quality in content and packaging. This professional look and presentation has found favor not only with the distance students, but also traditional students within the UWI and the TLIs for use of these materials in traditional face-to-face settings. The University's strong commitment to improving the print materials for distance students is a very pragmatic approach, since heavy reliance on technological means would disenfranchise a large number of prospective students. This conscious decision to embrace a print-based, manual-distribution platform appears to be a good move by the UWI given the economies of scale of other modalities and the inadequacies of technology in the region at the present time. The present platform has afforded the distance students of the region the anytime, anywhere, anyplace concept of studying without worrying about technology. However, it should be noted that the University might need to consider including some other technology as part of its ongoing improvement process as the dynamics of technology and access change.

Limitations

Although limited in scope (preliminary and exploratory), the data from this case study should provide insights to the stakeholders of the University of the West Indies with regards to its dual mode operations and by extension its role as an engine of growth in human resources development. Further, while the findings and recommendations of this case study should not be generalized beyond the population of the study, the data give rise to a new theory for greater understanding of the structure and delivery of distance education programs within the context of a dual mode institution. It also gives rise to an understanding of how the cultural change process of a University community has identified and accepted the changing needs necessary for human resource development of its constituents. Grounded in this data is the theory that the transition from traditional mode of delivery to the distance mode or a mixed mode of delivery bring with it challenges which are only conquered through training, staff development, and built-in awareness programs. In addition, despite the limitation of the study, the data suggests a valuable explanation of how a cultural change process influenced by changing needs can result in innovative programs to meet human resource development in a community.

Recommendations

Despite the embryonic success of the dual mode operation, one issue that needs greatest attention for the continued success of this operation, lies with the potential of faculty. Greater mobility and expansion still remains with how faculties perceive their role in the dual mode scenario. The University needs to provide this clarity so that faculty can adequately prepare for the smoother transition as we move into the next millennium and distance education takes on more prominence.

The University must embark on an ongoing training and initiation program to upgrade skills, create awareness for team efforts and move apace with advanced and improved technology in education. This can be planned through consultations with the Deans of the Faculties, the BNCCDE, UWIDEC and Faculty. It should be a reengineering process, a retooling to meet the changing demands and heightening of awareness in the teaching and learning acts (Verduin and Clark, 1990). The training for all concerned in distance education cannot be a one-shot approach and a "Strategic Plan for Continuous Training" should be developed and implemented. This training is

essential, especially as we compete with a growing number of educational interests in the region. It is important also in the context of changing dynamics and the incorporation of new media technologies.

The University should begin needs assessment research to determine the feasibility of incorporating the use of the computer into its delivery systems as part of it overall distance education program. The notion of online education is offering tremendous possibilities for both traditional and distance education. In keeping with the thrust of most Caribbean governments to push computer literacy in preparation for the twenty-first century, it would be prudent for UWI to take the lead in offering higher education courses incorporating the use of the computer in the distance education programs and courses offered through UWIDEC. However, this should not be done without ascertaining how many of the people could truly access such programs and at what cost if implemented.

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